

MINNESOTA ECONOMIC

TRENDS

A close-up photograph of a hand pouring a vibrant green liquid from a glass beaker into a graduated cylinder. The liquid is captured mid-pour, creating a dynamic sense of movement. The background is softly blurred, showing what appears to be a laboratory setting with other glassware.

FILLING THE STEM PIPELINE

CAREERS IN SCIENCE,
TECHNOLOGY, ENGINEERING
AND MATH

DECEMBER 2014

Minnesota
Department of Employment and Economic Development

Gray Wave



As one of 76.4 million baby boomers in the United States, I took special interest in Dave Senf's story in this issue about how retiring baby boomers will affect the Minnesota labor market.

We're already seeing the effects of the approaching gray wave, with the labor force participation rate steadily declining in Minnesota and nationwide — a trend that economists have been predicting for years. As Senf points out, barring another recession, the state labor market likely will get tighter over the next decade because of slower growth in the workforce. That, in turn, could hinder the ability of the economy to expand.

Fortunately, that scenario might prove to be overly pessimistic. Some wild cards could come into play, such as baby boomers deciding to work longer than past generations. Immigration might bring more workers to the state as well. Attracting marginally attached workers into the labor force through education and training programs will also help fill the baby boom worker gap.

One thing is certain: Baby boomers have had an outsized impact on the American economy and culture and will continue to do so in retirement.

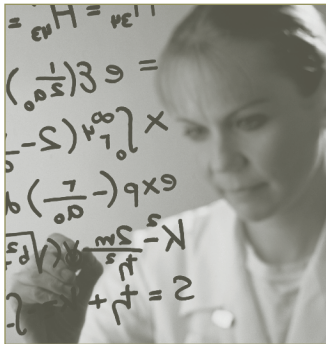
Our cover stories in this issue look at jobs in STEM — science, technology, engineering and math. Alessia Leibert examines overall career prospects for people with STEM-related degrees, while Cameron Macht zeroes in on STEM jobs in the health care sector. For someone looking for a career path that offers job opportunities and good pay, STEM might be just the ticket.

John Clay writes about DEED's new Cost of Living tool, while Scott Godfrey makes his Trends debut with a story about the increasing use of Minnesota WorkForce Centers by unemployed customers. Alexandrea Boyer looks at four in-demand careers that require only certificates or licenses.

We are ending the year with an outstanding issue and look forward to bringing you more of the same in 2015.

Monte Hanson
Editor

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Rewards of a STEM Education

STEM degrees in Minnesota offer plenty of career opportunities, including jobs outside of core STEM industries.

STEM industries and occupations are good for the overall economy because they drive innovation and competitiveness. But what specifically does the STEM economy encompass? That sector of the economy traditionally has been defined as a set of technology-based industries that hire a high percentage of workers with advanced training in science, technology, engineering and math, or STEM.

This definition, based on the occupations and industries shown in Figure 1, is useful as

a starting point, but it fails to capture the increasing demand for these credentials beyond STEM industries. Moreover, it overlooks opportunities for people who have less than a bachelor's degree but substantial STEM skills.

To get a better sense of the reach of the STEM workforce in Minnesota, this article looks at all people who recently earned STEM degrees and finds that many have jobs in industries outside the field.

The STEM Pipeline in Minnesota

From July 2006 to June 2011, a total of 55,355 people completed a post-secondary degree in Minnesota in a STEM discipline.² The most popular STEM majors were biological and biomedical sciences, IT, engineering and engineering technologies, each with graduating classes of more than 2,000 a year.

What sectors of the economy absorbed these graduates during the first three years

FIGURE 1

Traditional STEM Occupations and Industries¹**STEM Occupational Groups**

Architecture and Engineering
 Computer and Mathematics
 Life and Physical Sciences
 Sales of Technical and Scientific Products
 Management of Computer Systems,
 Engineering and Natural Sciences

STEM Core Industries

Advanced Manufacturing (Chemical,
 Machinery, Electronics, Pharmaceutical, etc.)
 Professional, Scientific and Technical Services
 Wholesale Trade of Scientific and
 Technical Products
 Information (Software Publishers,
 Telecommunication)
 Utilities, Mining, Oil and Gas Extraction

after graduation? As shown in Figure 2, only one out of three (31 percent) was employed in a STEM core industry. The reason is simple: Employment growth in high-tech STEM core industries in Minnesota has slowed and is projected to fall behind other industries.³ Eleven percent found jobs in STEM-related health care industries,⁴ where STEM skills are becoming increasingly relevant. The remaining 55 percent ended up outside STEM industries.

What makes STEM both fascinating and hard to measure is that a STEM education equips students with foundational skills that help them move confidently into a number of careers and industries. Besides health care, the most common non-STEM industries of employment for

FIGURE 2

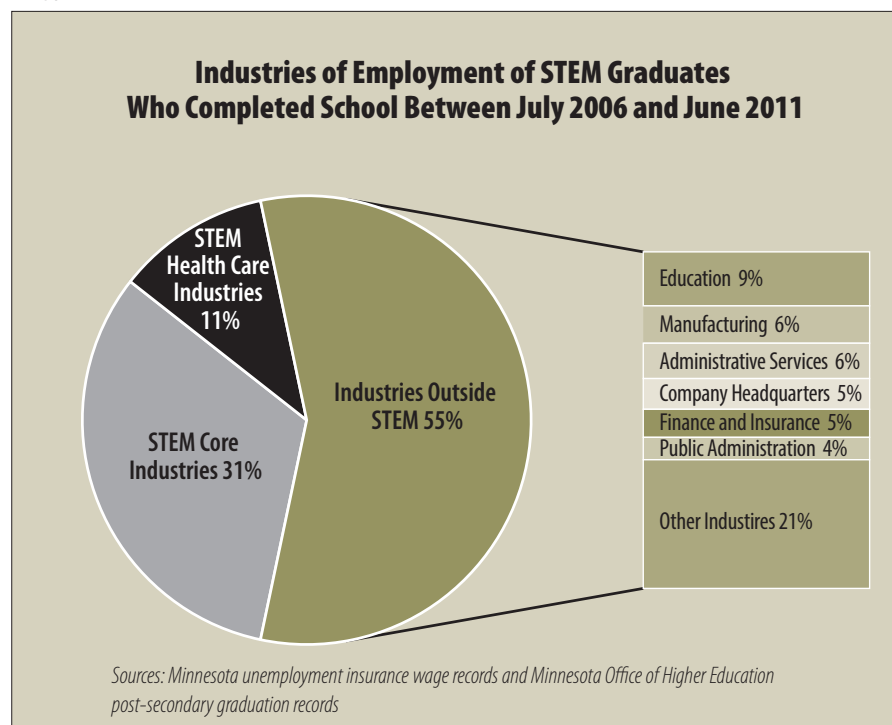
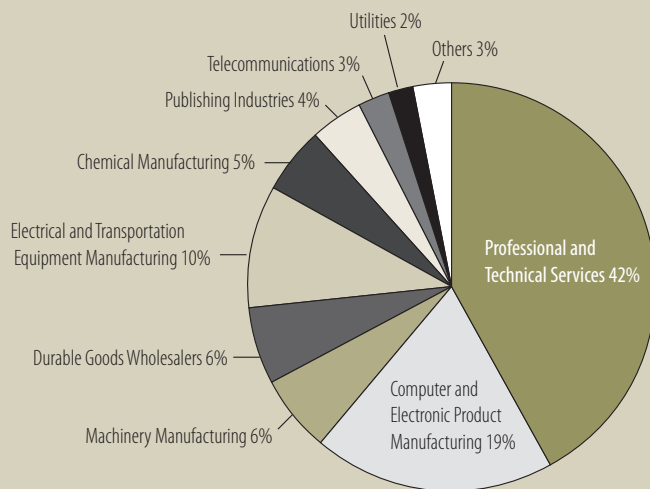
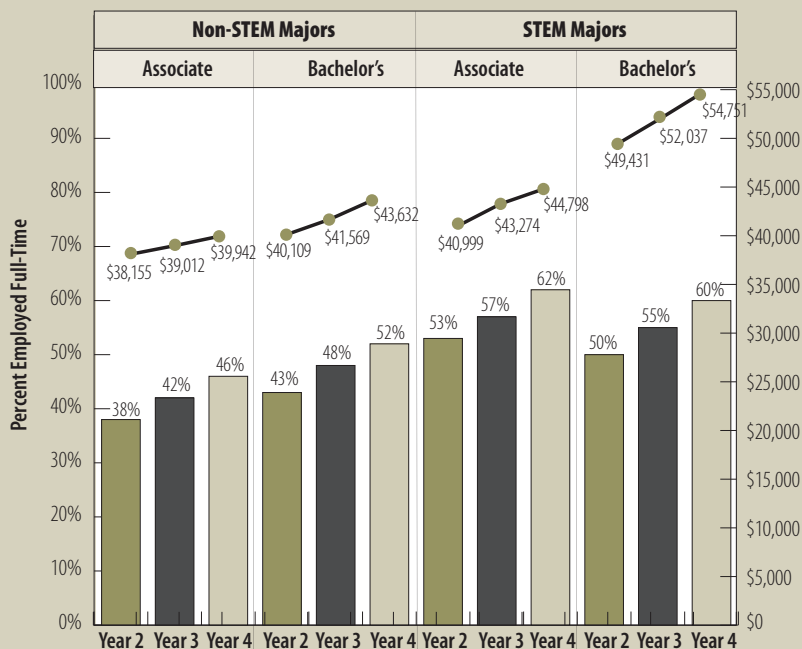


FIGURE 3

STEM Industries Where Graduates Found Jobs 2 Years After Earning a STEM Degree

Sources: Minnesota unemployment insurance wage records and Minnesota Office of Higher Education post-secondary graduation records

FIGURE 4

**Full-Time Employment and Earnings 2nd, 3rd, and 4th Year After Graduation
Class of 2007, 2008, 2009**

Sources: Minnesota unemployment insurance wage records and Minnesota Office of Higher Education post-secondary graduation records

STEM graduates are education (9 percent of employed STEM graduates), manufacturing (6 percent), administrative services (6 percent), company headquarters (5 percent), finance and insurance (5 percent) and public administration (4 percent).

Although we do not know the occupations of graduates who work in these industries, we can make educated guesses based on educational background, industry of employment, wages and hours worked. For example, graduates might be teaching STEM-related subjects in a school, conducting actuarial or financial analysis for an insurance company, monitoring environmental policy standards in a manufacturing firm or state agency, or running an IT data center at a company's headquarters.

What about graduates who landed a job in a STEM core industry? As shown in Figure 3, the largest group (42 percent) was hired in professional and technical services, followed by 19 percent in computer and electronic product manufacturing, a high-tech industry sector projected to shrink by 11 percent in this decade. Sluggish employment growth in these industries is partially attributable to technological innovations that replace labor with machines and software.

Measuring the Success of STEM Graduates

What is the value of a STEM degree if only a minority of STEM-trained workers found jobs in STEM industries? Figure 4 presents evidence of the strong market value of a STEM degree in Minnesota regardless of industry of employment.

Only one year after graduation, people with a bachelor's degree in a STEM field had wages that were nearly \$10,000 higher (or 25 percent more) than their non-STEM counterparts and rose more rapidly in subsequent years, indicating high earning potential. People with associate degrees in STEM fields also fared better than others.

STEM graduates were also more likely to be employed full time for the whole year, as shown by the vertical bars. Fifty percent of graduates in a STEM field were employed full time without interruption during the second year after graduation, compared with 38 percent of people with associate degrees and 43 percent of those with bachelor's degrees in non-STEM fields. Since full-time employment is an indicator of health care and other benefits coverage and because continuous work histories translate to higher wages and better career prospects over time, STEM graduates appear to have better chances of landing a high-quality job than non-STEM graduates.

Gender Divide in STEM

Sixty-seven percent of STEM degree holders from 2006 to 2012 were male. This imbalance masks large differences in gender composition by detailed major, as displayed in Figure 5. Male-dominated majors like IT and engineering pay significantly more than female-dominated majors like biology and agricultural sciences, especially animal sciences. In general, within STEM majors, the lower the earnings after graduation, the greater the share of female graduates.

Are women being paid less than men with equal education? The answer is no. There were no differences between full-time wages earned by female and male graduates within the same major and education level. The difference in earnings is driven by the choice of major, which reflects differences in career choices between men and women. We can infer from the figures presented in Figure 5 that women tend to be more interested in careers in health care, veterinary services, food science, public administration and education.

FIGURE 5

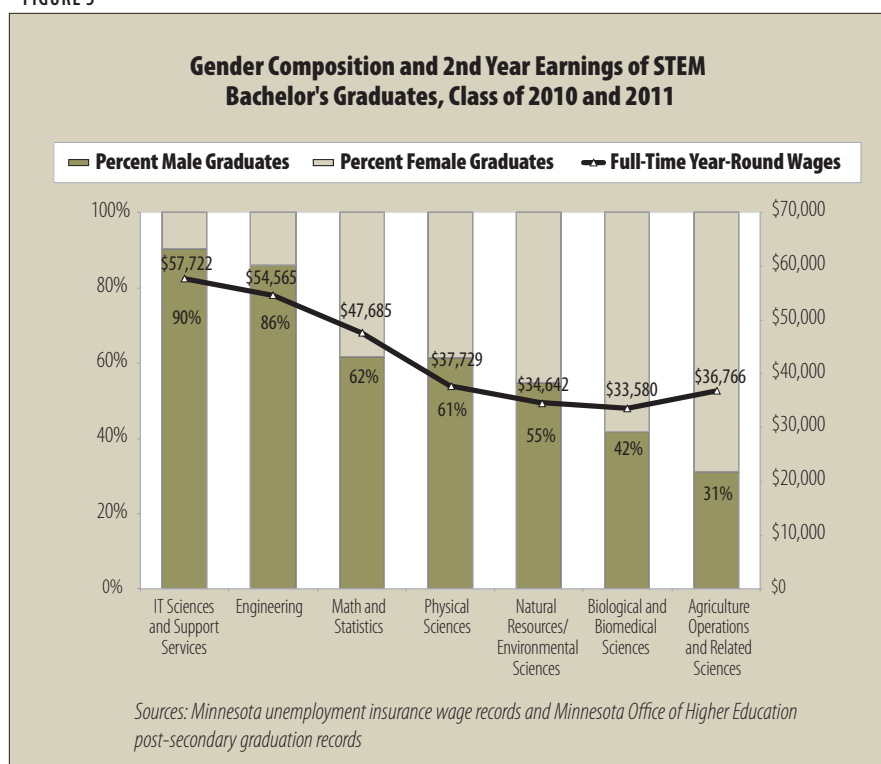
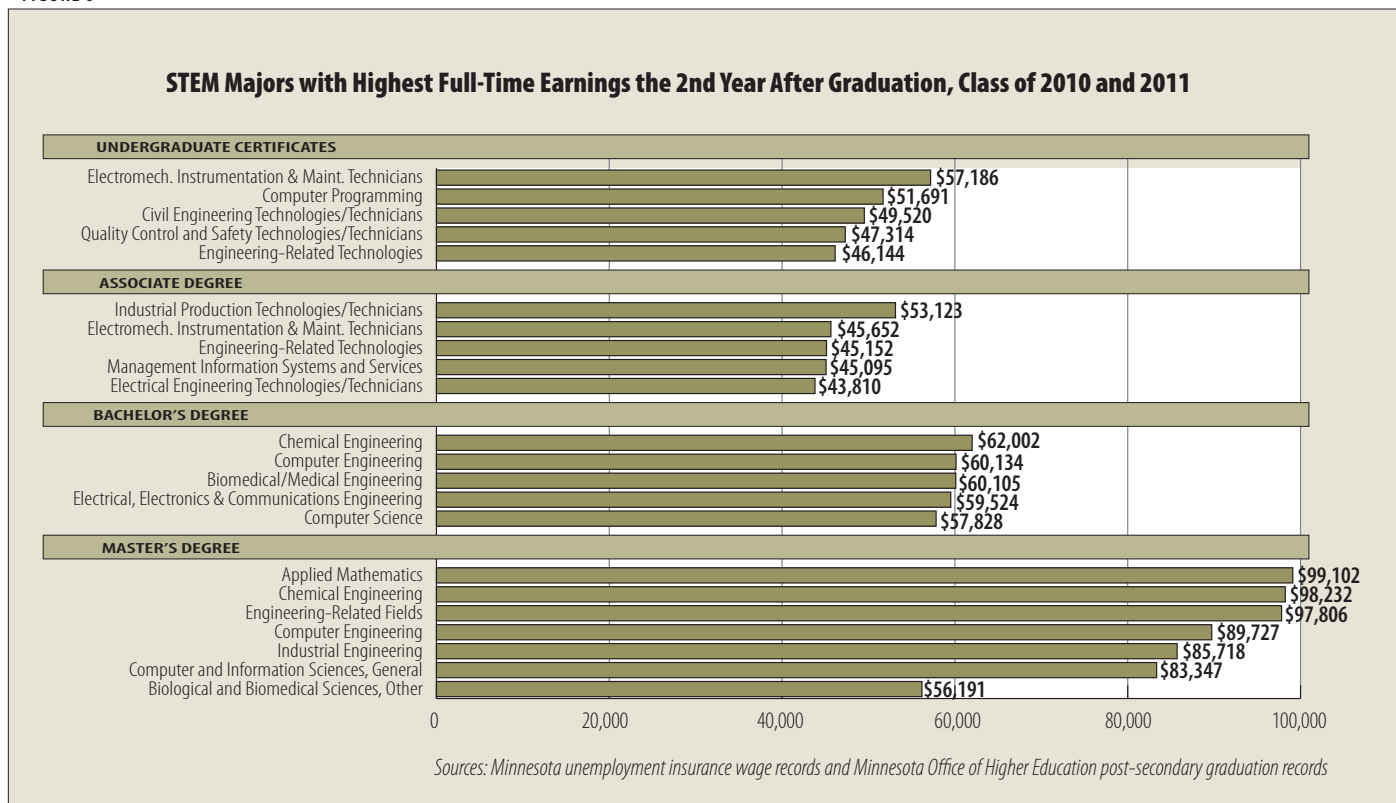


FIGURE 6



The existence of different typical pathways for male and female STEM graduates in the labor market is confirmed by data on industries of employment. While 40 percent of female STEM graduates worked in health care, education or public administration one year after finishing school, only 19 percent of male graduates worked in these industries. Thirty-four percent of male STEM graduates worked in technology-intensive, private sector industries like professional and technical services and manufacturing, which tend to pay higher salaries.

What we gather from this evidence is that choice of major trumps gender in determining earning prospects in STEM disciplines. Many reasons besides earnings factor into the choice of a career. Job stability prospects, health care benefits and work schedules, for example, might carry more weight for women compared with men. We do not know to what extent choice of major may have been different if women had more role models encouraging them to pursue technology-oriented, male-dominated STEM careers. What we know is that women who graduated in male-dominated

STEM fields earned the same wages by industry as their male counterparts, demonstrating women's ability and potential to succeed in any STEM field.

Blue Collar and Technical STEM Opportunities

If opportunities in science have been overrated in Minnesota, those in blue collar STEM jobs have definitely been underrated. Short-term engineering certificates like industrial production and quality control technicians are among the top-paying STEM degrees (see Figure

6). IT majors like computer programming and management information systems also offer great opportunities at the undergraduate level.

Just one year after graduation, sub-baccalaureate completers in engineering, engineering technologies and IT can already earn far above the \$37,765 median wage for all workers in the state. Biology and the physical sciences, in contrast, pay off predominantly at the graduate level, while agriculture and natural resources and conservation do not make the top ranks.

Conclusions

This article offers insight into the composition and economic success of the STEM educational pipeline in Minnesota. Only half of employed STEM degree holders were hired in a STEM core industry, probably as a consequence of slow growth in

the state's high-tech sectors and fast growth in health care and other industries where STEM credentials are in demand. In particular, the success of graduates in engineering and IT at all levels of education stands as evidence of high demand for quantitative and analytical skills across industries and occupations.

This article also describes distinct paths into the labor market for female and male STEM graduates, with high concentrations of women in science and health care-related STEM majors and high concentrations of men in IT and engineering. Policies aimed at increasing the STEM education pipeline should also aim to improve gender diversity rather than just increase the size of graduating classes. This would entail encouraging more women to pursue male-dominated, technology-oriented STEM careers. ¹



¹This article excludes health care industries and occupations.

²Social science majors, such as sociology, were excluded from the definition of STEM because, with the exception of econometrics, which we included in this study, they generally do not rely on math or the scientific method in their work, and graduates don't typically aspire to work in STEM careers or industries.

³According to 2012-2022 employment projections, STEM industries are poised to grow only by 3 percent versus 7 percent economy-wide.

⁴Health care STEM industries include offices of physicians and dentists, outpatient care centers, medical and diagnostic laboratories, home health care services, hospitals and nursing care facilities.

A Healthy Dose of STEM Jobs

STEM jobs in health care are expected to be plentiful and well-paying in the coming years.



In the last issue of Trends, we examined the Core Component of the emerging STEM field in Minnesota. STEM, which stands for science, technology, engineering and math, is typically linked to industries like computer systems design, electromedical instruments manufacturing, architectural and engineering services, and management, scientific and technical consulting services, among others.

The STEM Core Component saw steady job growth in the state in the last decade, expanding more than twice as fast as the total of all industries from 2003 to 2013, although growth is projected to slow. But this group of STEM industries actually accounts for only 40 percent of total STEM employment in Minnesota, using the taxonomy developed by the Workforce Information Council's report "Exploring the High Tech Industry."

The health care industry has the other 60 percent. Although it is often overlooked as a high tech industry, health care obviously relies on science and technology. By reviewing STEM jobs across all industry sectors, the Workforce Information Council categorized 13 industry subsectors in the STEM Health Care Component, selecting only those sectors with a concentration level of 2.5 times the national average of STEM jobs.

These industries, which rely on a highly trained workforce to provide quality health care, are the focus of this article.

Healthy Growth in Health Care

Through 2013, Minnesota had about 335,000 jobs in STEM health care industries, according to data from DEED's Quarterly Census of Employment and Wages. In the last decade, STEM health care industries added jobs nearly four times as fast as all industries in

Minnesota, gaining just over 48,400 net new jobs, a 16.9 percent increase.

The largest employing STEM Health Care Component sector in Minnesota was general medical and surgical hospitals, with more than 116,000 jobs at 201 hospitals, accounting for just over one-third (34.8 percent) of total STEM health care employment. The next largest industry was offices of physicians, with about 65,000

jobs at 1,660 clinics, followed by skilled nursing homes, with about 48,500 jobs at 463 nursing care facilities.

Combined, those three sectors account for two-thirds (68.7 percent) of total STEM health care employment in the state (see Table 1).

The fastest-growing industry sector over the last decade was home health care services, which doubled in size from 2003 to

2013. Minnesota also saw rapid job growth at outpatient care centers; other professional, scientific and technical services (which includes veterinary services); medical and diagnostic laboratories; and offices of other health practitioners (which includes chiropractors; optometrists; mental health practitioners; physical, occupational and speech therapists; and all other health practitioners).

TABLE 1

Employment in Minnesota's STEM Health Care Industries, 2003-2013

NAICS Industry Title	NAICS Code	Number of Establishments, 2013	Number of Jobs, 2013	Average Annual Wages, 2013	2009-2013 Job Change	2007-2013 Job Change	2003-2013 Job Change
Total, All Industries	0	165,051	2,691,763	\$50,128	+4.6%	+0.1%	+4.4%
Total, STEM Health Care Industries		12,701	334,416	\$55,121	+4.9%	+7.5%	+16.9%
Health and Personal Care Stores	4461	1,777	15,850	\$36,088	+5.7%	+1.1%	+8.3%
Other Professional, Scientific and Technical Services	5419	2,928	14,397	\$50,440	+14.9%	+16.1%	+56.1%
Offices of Physicians	6211	1,660	64,936	\$91,052	+3.8%	+5.4%	+13.3%
Offices of Dentists	6212	1,890	15,581	\$50,440	-1.8%	+0.5%	+4.9%
Offices of Other Health Practitioners	6213	2,534	13,772	\$37,024	+22.5%	+31.0%	+47.7%
Outpatient Care Centers	6214	415	10,411	\$65,000	+8.7%	-7.2%	+60.5%
Medical and Diagnostic Laboratories	6215	103	2,628	\$66,664	+8.3%	+23.1%	+53.2%
Home Health Care Services	6216	459	21,434	\$25,324	+18.5%	+49.1%	+99.3%
Other Ambulatory Health Care Services	6219	241	6,693	\$50,908	+6.7%	+17.0%	+34.5%
General Medical and Surgical Hospitals	6221	201	116,313	\$57,512	+5.8%	+7.1%	+15.0%
Psychiatric and Substance Abuse Hospitals* (government only)	6222	22*	2,526*	\$53,196*	-10.2%	-19.9%	-13.8%
Specialty (exc. Psych. & Substance Abuse) Hospitals^ (2009 data)	6223	8^	1,377^	\$61,412^	ND	ND	ND
Nursing Care Facilities (Skilled Nursing Facilities)	6231	463	48,498	\$26,208	-5.2%	-1.1%	-6.0%

Source: DEED Quarterly Census of Employment and Wages (QCEW) program

Only two health care sectors experienced a net loss in employment over the last decade: psychiatric and substance abuse hospitals (which declined about 14 percent) and nursing care facilities (skilled nursing facilities), which lost just over 3,000 jobs from 2003 to 2013.

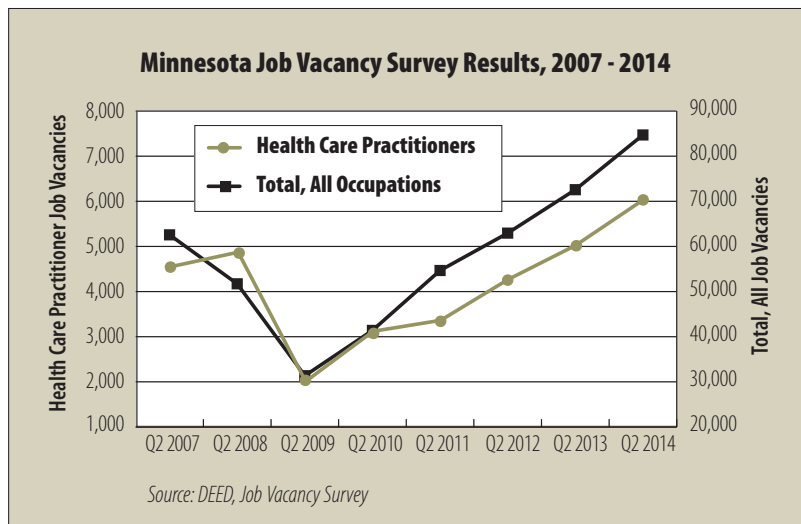
Much of that employment, however, has shifted into home health care services and to continuing care retirement communities and assisted living facilities for the elderly, which also doubled in employment in the last 10 years, though not classified as a STEM sector.

These Jobs Require Practice and Patients

As with the STEM Core Component industries, not every job in these sectors is STEM-related. For example, offices of physicians have just as many medical secretaries as registered nurses, and just as many billing and posting clerks as licensed practical nurses. In both cases, only the nursing positions are considered STEM occupations.

The Workforce Information Council report identified 61 STEM Health Care Component occupations, primarily in the health care practitioners and technical occupational group. These occupations comprise about half of the total jobs in the STEM health care industries, accounting for 168,540 jobs in

FIGURE 1



Minnesota in 2014, according to DEED's Occupational Employment Statistics program.

All 61 occupations are expected to see employment growth over the next decade, ranging from slower-than-average growth for chiropractors, dentists and nursing instructors to well-above-average growth for physician assistants, diagnostic medical sonographers, genetic counselors, nurse midwives, orthotists and prosthetists, and nurse practitioners. All of the well-above-average occupations are expected to grow more than 25 percent from 2012 to 2022.

In sum, these occupations are projected to gain more than 27,500 new jobs in the next 10 years, but they will also need new workers to fill nearly 34,500 replacement openings due to retirements or other existing workers leaving the labor force. According to DEED's

Employment Outlook, the state will have 62,220 total openings in STEM Health Care Component occupations from 2012 to 2022.

Stay in School

While these jobs are expected to be available and in demand, they won't necessarily be easy to get. Job seekers interested in the STEM health care field will need to stay in school. Well over 90 percent of the STEM Health Care Component occupations typically require postsecondary education for entry.

More than half of lower-skilled health care support occupations can be gained with a high school diploma or less. But only five of the 61 STEM Health Care Component occupations can be gained with a high school diploma or less, with the other 56 requiring at least a postsecondary vocational award.

Thirteen require at least an associate degree, nine require a bachelor's degree, 10 require a master's degree, and 18 require a doctoral or professional degree.

Combined, the occupations requiring postsecondary education account for 157,980 of the 168,540 STEM Health Care Component workers currently employed in the state. Those occupations are expected to make up an even larger portion of the employment picture by 2022, due to faster overall projected growth rates.

Help Wanted

Data from DEED's Job Vacancy Survey show strong current demand for health care practitioners and technical occupations as well, with employers reporting more than 6,000 job postings through the second quarter of 2014. After sinking during the recession, demand for health care practitioners has bounced back in recent years and is now well above pre-recession levels (see Figure 1).

Similarly, 94 percent of these vacancies require postsecondary education, including 42 percent that require vocational awards or associate degrees, 22 percent that require bachelor's degrees, and 30 percent that require advanced degrees. In addition, two-thirds of the openings expect at least one year of work experience, and 93 percent require a certificate or license (see Table 2).

Consequently, wages were significantly higher for these STEM Health Care Component occupations than for the total of all occupations. All but one health care practitioner occupation had a higher median hourly wage offer than the total of all occupations, and most median wage offers were well over \$20 per hour. Median wage offers ranged from about \$11.50 an hour for dietetic technicians to nearly \$55 an hour for psychiatrists and obstetricians and gynecologists. Only six of the 61 STEM Health Care Component occupations had below-average median hourly wages.

With 1,699 vacancies, registered nurses accounted for almost one-third of the total openings in the group. They had a median wage offer of \$26.90 per hour. Fifty-three percent of registered nurse openings, however, were part time. Likewise, 52 percent of the 840 vacancies for licensed practical nurses were part time, with a median hourly wage offer of \$17.13. Nurse practitioners had one of the highest job vacancy rates of any health care occupation with 555 openings and a median hourly wage offer of \$41.54.

Job seekers looking for a chance to use their science and technology skills in a field that offers high demand, high pay and high future prospects for growth should examine Minnesota's STEM health care field. ■

TABLE 2

Minnesota Job Vacancy Survey Details, Q2 2014

Occupational Group	Number of Job Vacancies	Part-time Vacancies	Requiring Postsecondary Education	Requiring 1+ Years Experience	Requiring Certificate or License	Median Wage Offer
Total, All Occupations	84,696	42%	36%	44%	33%	\$12.05
Health Care Practitioners and Technical	6,036	41%	94%	66%	93%	\$26.08

Source: DEED Job Vacancy Survey, Q2 2014

WorkForce Centers Reaching More Customers

The percentage of unemployed Minnesotans using resources at some of the state's WorkForce Centers exceeded 20 percent in 2013.



Helping people learn new work skills and find jobs is among the many missions of the Minnesota Department of Employment and Economic Development (DEED). Though delivered in various ways at various locations, the first stop in accessing many of the agency's job programs and services is at a Minnesota WorkForce Center (WFC). DEED has nearly 50 of these facilities scattered around the state.

This article examines the average monthly share of unemployed Minnesotans who attended a workshop or used a resource room computer at a WFC between 2011 and 2013.

Various factors might have influenced the percentage of jobless people using the centers during that period. The steady decrease in unemployment following the Great Recession, for example, likely increased the percentage of unemployed workers using the centers. Similarly, changes to DEED policy requiring people receiving unemployment insurance (UI) benefits to use WFC resources had the potential to increase the percent of unemployed customers.

Conversely, geography might have lowered the percent of unemployed Minnesotans using WFC resources in some areas of the state. We'll explain why later in this article.

We unfortunately can't know how center usage by the unemployed today compares with usage before and during the Great Recession. Records on people visiting a WFC are not retained indefinitely, so we cannot utilize data on all WFC customers from more than three years ago. In the case of this article, we are limited to beginning in calendar year 2011.

What we do know from our records is that the average

monthly share of unemployed people using Minnesota WorkForce Center services has increased statewide since 2011, rising from about 8 percent three years ago to about 13 percent in 2013. We also know that several WFCs now serve more than 20 percent of unemployed workers in their areas.

Impact of Unemployment

The unemployment rate in Minnesota reached an average

monthly high of 8 percent (236,676 people) in 2009, nearly doubling from the average monthly rate of 4.7 percent in 2007. This rise in unemployment can be seen across all 16 Workforce Service Areas (WSA) in Minnesota.

Since that time, the average monthly unemployment rate has steadily decreased, dropping to 5.1 percent in 2013 (see Table 1). Assuming the number of people visiting WFCs remains

TABLE 1

Average Monthly Percent of Unemployment by Work Force Service Area (WSA)

Workforce Service Area	2007	2008	2009	2010	2011	2012	2013
WSA 1 - Northwest Minnesota	6.0%	5.9%	7.7%	6.9%	6.4%	5.6%	5.2%
WSA 2 - Rural Minnesota CEP	5.5%	6.3%	8.6%	7.7%	7.1%	6.1%	5.7%
WSA 3 - Northeast Minnesota	6.3%	7.0%	10.2%	8.6%	7.9%	7.0%	6.9%
WSA 4 - City of Duluth	5.0%	5.7%	7.9%	7.7%	7.0%	6.1%	5.6%
WSA 5 - Central Minnesota	5.6%	6.5%	9.7%	8.7%	7.6%	6.6%	5.9%
WSA 6 - Southwest Minnesota	4.1%	4.8%	6.3%	5.8%	5.3%	4.6%	4.5%
WSA 7 - South Central Minnesota	4.6%	5.3%	7.8%	7.0%	6.0%	5.3%	4.9%
WSA 8 - Southeast Minnesota	4.4%	5.1%	7.5%	6.9%	6.0%	5.2%	4.7%
WSA 9 - Hennepin/Carver	4.0%	4.8%	7.5%	6.9%	5.9%	5.1%	4.6%
WSA 10 - City of Minneapolis	4.3%	5.0%	7.5%	7.1%	6.3%	5.5%	4.9%
WSA 12 - Anoka County	4.6%	5.4%	8.6%	7.9%	6.7%	5.8%	5.1%
WSA 14 - Dakota/Scott	4.1%	4.9%	7.4%	7.1%	6.1%	5.2%	4.7%
WSA 15 - Ramsey County	4.5%	5.2%	7.9%	7.4%	6.6%	5.7%	5.0%
WSA 16 - Washington County	4.0%	5.0%	7.5%	6.9%	6.2%	5.3%	4.6%
WSA 17 - Stearns/Benton	4.7%	5.6%	8.2%	7.5%	6.5%	5.6%	5.2%
WSA 18 - Winona County	4.2%	4.8%	7.9%	6.8%	5.9%	5.0%	4.6%
State of Minnesota	4.7%	5.4%	8.0%	7.4%	6.5%	5.6%	5.1%

Source: DEED, Local Area Unemployment Statistics (LAUS) and MinnesotaWorks.net

relatively constant, a decrease in the unemployment rate would immediately raise the percent of jobless people visiting a WFC.

Impact of UI and REA Program

State unemployment insurance provides temporary partial wage replacement when workers lose their jobs. Although not all unemployed people qualify for UI benefits, those who do may receive up to 50 percent of their average weekly wage for 26 weeks.

During the recession, Minnesota received additional federal funding to extend the benefits period, but UI claimants had to

attend workshops and seek job search assistance at a Minnesota WorkForce Center in order to qualify. That program is now called the Reemployment Eligibility Assessment program (REA).

Since the REA program requires some UI claimants to use WFC resources, we would expect the percent of unemployed people going to centers to increase, particularly as the capacity of the program increased during the post-recessionary period.

Impact of Geography

Distance likely served to lower the percentage of unemployed workers using the

centers, particularly in Greater Minnesota. While some WFCs are in geographically small and densely populated Workforce Service Areas, others are assigned to large WSAs that span multiple counties.

WorkForce Center Usage

We would expect the steady decrease in unemployed workers, along with the change in UI policy requiring recently unemployed workers to use WFC services, to increase usage during this period. Conversely, we would also expect the varying geography of the WorkForce Service Areas to drive down the usage rate in some areas of the state.

Possibly as a result of these influences, we saw a steady rise in the share of unemployed workers using WFC resources since 2011.

We also see the anticipated differences in WFC usage rates by Workforce Service Area. Smaller WSAs in more densely populated areas of the state tend to have higher rates of usage. The top three in 2013 were WSA 4 (Duluth, 25.5 percent), WSA 10 (Minneapolis, 20.6 percent) and WSA 18 (Winona, 20.6 percent) (see Table 2).



This relationship between population density and high WFC usage holds true for more than these three WSAs. With the exception of the Hennepin/Carver WSA, the seven-county metro area reaches more of its unemployed population than does Greater Minnesota. A possible explanation for the Hennepin/Carver WSA is the absence of a WorkForce Center in Carver County. Each of the other metro counties have their own facility.

WSA 1 (northwestern Minnesota) is the only area of the state that continues to serve less than 5 percent of the unemployed through workshops or the resource room computers. Geography is likely a significant factor here, as WSA 1 is the only multicounty WSA with one WorkForce Center. WSA1 is also the only area whose percent of unemployed served has dropped back below 2011 levels.

Conclusion

Over the past three years, the average monthly percentage of unemployed people attending a workshop or using a resource room computer at a Minnesota WorkForce Center has steadily increased. Encouragingly, several WSAs are now reaching 20 percent or more of the unemployed in their area, and

TABLE 2

Average Monthly Percent of Unemployed Using WFC Resources by WSA			
Workforce Service Area	2011	2012	2013
WSA 1 - Northwest Minnesota	4.7%	5.4%	3.6%
WSA 2 - Rural Minnesota CEP	10.8%	14.6%	13.6%
WSA 3 - Northeast Minnesota	8.3%	10.3%	10.1%
WSA 4 - City of Duluth	17.1%	23.6%	25.5%
WSA 5 - Central Minnesota	6.4%	8.8%	8.8%
WSA 6 - Southwest Minnesota	6.4%	9.5%	9.7%
WSA 7 - South Central Minnesota	7.4%	10.1%	11.2%
WSA 8 - Southeast Minnesota	8.5%	10.7%	11.0%
WSA 9 - Hennepin/Carver	5.2%	8.9%	9.0%
WSA 10 - City of Minneapolis	13.5%	18.3%	20.6%
WSA 12 - Anoka County	12.4%	17.5%	18.8%
WSA 14 - Dakota/Scott	10.3%	15.9%	17.7%
WSA 15 - Ramsey County	8.1%	12.4%	14.7%
WSA 16 - Washington County	7.6%	12.8%	15.7%
WSA 17 - Stearns/Benton	9.9%	12.5%	11.5%
WSA 18 - Winona County	13.0%	18.0%	20.6%
State of Minnesota	8.5%	11.9%	12.7%

Source: DEED, Local Area Unemployment Statistics and MinnesotaWorks.net

these gains appear to be holding for the majority of WorkForce Service Areas. Only a few have seen a decrease since 2012. These are important steps in the right direction for DEED. Each additional person served by a WorkForce Center is another person whose economic future can be improved. ■

Calculating the Cost of Living

DEED's new Cost of Living tool is providing valuable information to employers, job seekers, policymakers and economic planners in Minnesota.

Understanding the cost of living in Minnesota just got easier with a new tool developed by the Labor Market Information Office at DEED. The Cost of Living tool estimates basic costs for individuals and families — by county, region and state.

The online tool uses federal and state data to examine costs in seven categories: food, housing, health care, transportation, child care, other necessities and net taxes. Total costs are presented as yearly and hourly dollar amounts, while category costs are presented in monthly dollar amounts.



The study was mandated by the Minnesota Legislature. It fills a gap in the state's economic information in the following ways:

- Employers want to set wages that attract and retain good workers. The tool can help gauge whether wages in a certain county will pay the bills and attract workers.
- Job seekers want to know what wages will cover family costs in their county.
- Policymakers want to know if the need for public subsidies is likely to rise or fall. Regional wages that meet or exceed the cost of living can signal reduced need for subsidies.
- Economic planners want to know if consumer expenditures will grow or slow. Regional wages that meet or exceed the cost of living can signal a potential for growth in the consumer economy.

What We Can Learn

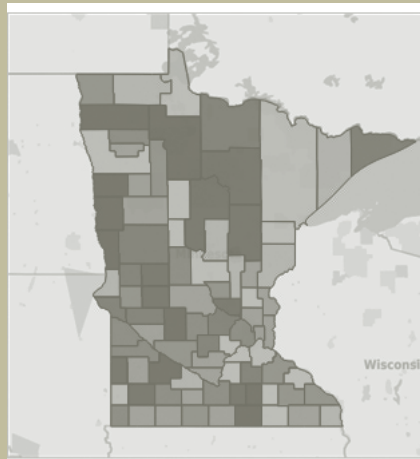
The tool shows how family size, work hours, and region can affect costs. Let's look at a statewide average for a two-parent family with one child age four to five, recalling that these are estimates and actual cases can vary.

On one full-time job, the family needs \$19.83 an hour to meet basic needs. On a full-time job for one parent and part-time for the other, they need \$16.25 an hour. On two full-time jobs, they need \$13.81 an hour. The hourly wage falls as family costs are spread across more work hours. The surprise is that the family's yearly costs are rising as the total work hours go beyond 40 a week.

If one parent already works full-time, adding a part-time job for the second parent triggers monthly child care costs of \$433 and adds \$265 in transportation costs. Moving that job from part-time to full-time doubles the monthly child care cost.

The family's yearly costs go from \$41,244 with one full-time worker, to \$50,688 with a full- and part-time worker, and to \$57,468 with two full-time workers. This includes taxes due on the additional income required for child care and transportation.

The added hours do no more than pay for the added costs of working more hours. To get ahead, the parents would need to make more than these hourly rates or one parent would need to work more than 40 hours a week while the other remains at home.



Region type:
County

I am:

- ☐ Single
- ☐ Partnered - 1 full-time worker
- ☒ Partnered - 1 full-time, 1 part-time worker
- ☐ Partnered - 2 full-time workers

How many children?
1

Average family size in Minnesota:
3 persons

Family Yearly Cost, Worker Hourly Wage, and Family Monthly Costs

Cost of Living, Minnesota DEED, Labor Market Information

	Yearly Cost	Hourly Wage	Child Care	Food	Health Care	Housing	Transport	Other	Taxes
Aitkin County	\$49,054	\$15.72	302	736	343	722	1,334	233	418
Anoka County	\$56,753	\$18.19	538	740	455	967	1,215	273	541
Becker County	\$44,449	\$14.25	228	737	343	651	1,205	222	318
Beltrami County	\$42,723	\$13.69	232	738	343	689	1,057	228	273
Benton County	\$43,400	\$13.91	218	722	330	769	1,057	239	283
Big Stone Cou..	\$40,381	\$12.94	191	751	343	651	988	224	217
Blue Earth Cou..	\$39,548	\$12.68	222	734	330	719	870	233	188
Brown County	\$38,409	\$12.31	204	743	343	651	870	223	166
Carlton County	\$42,826	\$13.73	255	734	330	707	1,038	231	274
Carver County	\$55,200	\$17.69	522	751	455	967	1,117	275	513
Cass County	\$45,349	\$14.53	222	737	343	731	1,176	235	335
Chippewa Cou..	\$40,318	\$12.92	191	747	343	660	979	225	215
Chisago County	\$57,121	\$18.31	408	732	455	967	1,373	272	554
Clay County	\$41,321	\$13.24	291	741	330	699	919	230	233
Clearwater Cou..	\$45,884	\$14.71	189	738	343	651	1,324	222	356
Cook County	\$43,752	\$14.02	287	734	343	809	939	247	286
Cottonwood Co..	\$38,783	\$12.43	201	748	343	651	890	224	176
Crow Wing Co..	\$45,412	\$14.56	255	732	343	737	1,146	235	336
Dakota County	\$55,901	\$17.92	607	744	455	967	1,087	274	525
Dodge County	\$47,106	\$15.10	253	732	330	882	1,107	258	363
Douglas County	\$40,995	\$13.14	195	736	343	651	1,038	222	232
Faribault County	\$42,341	\$13.57	191	771	343	651	1,077	227	268
Fillmore County	\$46,887	\$15.03	218	738	343	651	1,353	222	382
Freeborn County	\$40,954	\$13.13	217	741	343	651	1,008	223	230
Goodhue Coun..	\$47,886	\$15.35	285	737	343	761	1,235	240	389
Grant County	\$44,855	\$14.38	236	750	343	651	1,205	224	329
Hennepin Coun..	\$55,778	\$17.88	617	772	455	967	1,038	278	522
Houston County	\$41,939	\$13.44	212	740	330	714	1,018	233	248
Hubbard County	\$44,439	\$14.24	222	742	343	651	1,205	223	318

tableau

Making a Selection

When using the tool, job seekers might select the family composition that comes closest to their own. Or if planning a family, they might try scenarios for future needs.

Employers, policymakers and researchers might be more likely to select an average family composition. The average family size in Minnesota is three people, and the average work week is less than 35 hours, according to the American Community Survey and the Current Employment Statistics survey.

The category “partnered, one full-time and one part-time worker, one child” provides a standard yearly cost and hourly wage need for a typical Minnesota family, regardless of how the weekly work hours are distributed between the two adults.

A Basic Living

The cost of living represents neither a poverty-level living nor a middle-class living but rather a living that meets basic needs for health and safety.

No money is built in for savings, vacations, entertainment, eating



out, tobacco or alcohol, even though most of these elements are part of a normal healthy life. To meet the mandate of a basic-needs living, the tool excludes these costs.


A New Look at Living Costs

Rather than describing what families spend as the Consumer Expenditure Survey does, the tool estimates the cost of basic needs. We might buy one apple for two children if that is all we can afford, even though we need two apples. That's why spending is not a reliable indicator of needs.

And rather than looking at a change in costs over time as the Consumer Price Index does,

the study looks at dollar costs. We don't ask the cashier at the store how many percent higher the apple's price is today than yesterday. We ask: How much does the apple cost?

The online tool shows costs for 24 family compositions in 107 Minnesota regions, for a total of 2,568 results. The full database offers additional family compositions by gender and age.

To request results beyond those represented in the online tool, talk with our experts at the Labor Market Information Office at 651-259-7384. Find the tool at <http://mn.gov/deed/data/data-tools/col/index.jsp>. 

Ready or Not, Baby Boomer Retirement Wave is Here

Job growth in Minnesota is anticipated to slow in the near future as more baby boomers retire and the labor market tightens.

After enjoying a strong decade between 1992 and 2002, Minnesota job growth during the next decade was dismal, with the state and the country struggling to recover from the Great Recession.

Only 28,800 jobs were added in Minnesota between 2002 and 2012, a 1 percent increase.¹ Labor force growth was a bit better, expanding 81,000 (2.8 percent), which was still far below the 413,000 labor force increase during the previous decade.

Job growth in the next 10 years is expected to be substantially improved over the 2002 to 2012 period, but it will be constrained by a shortage of workers. Minnesota is expected to add 205,000 jobs between 2012 and 2022, a 7 percent increase, but the labor force is projected to increase by only 68,400, a 2.3 percent increase (see Figure 1).²

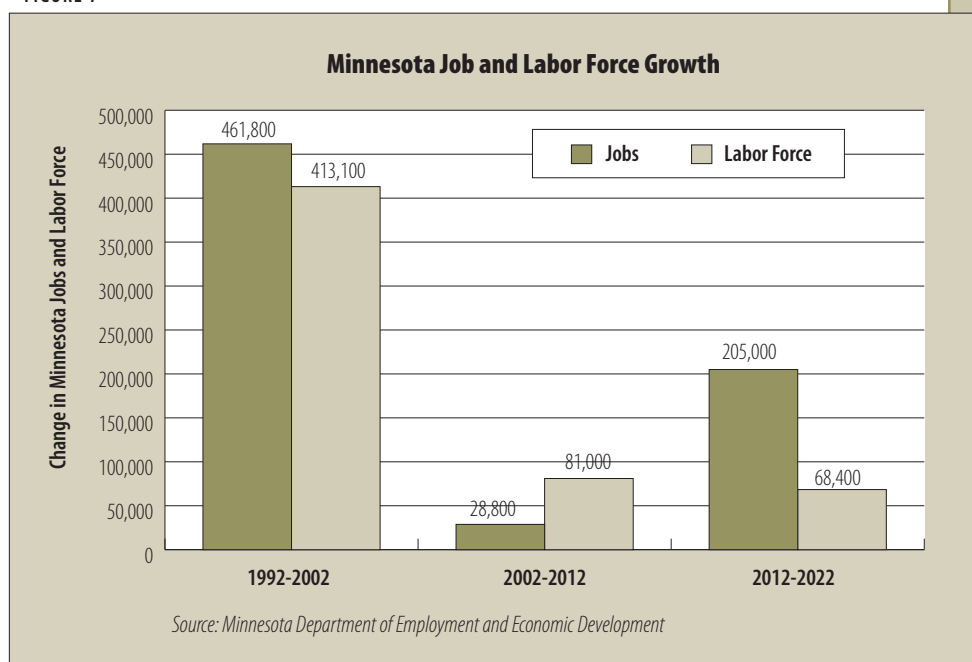
The state's unemployment rate will dip below 3 percent later in the decade as job growth outpaces labor force growth

in Minnesota. Within a few years, the state's unemployment rate will look a lot like North Dakota's rate in recent years and Minnesota's rate during the boom years from 1998 to 2000.

Minnesota's job growth did slow slightly during the last few years of the 1990s when a labor shortage developed, but the 2001 recession increased layoffs and decreased hiring, taking care of the labor shortage problem.

Waning labor force growth over the next decade will generate another tight labor market, barring another recession. Job growth will be significantly slower than 20 years ago. Unlike two decades ago, when the labor force was growing about 1.5 percent a year, annual labor force growth in coming years will be only about 0.3 percent, thereby intensifying the shortage of workers.

FIGURE 1





The retirement of the baby boomers, which started in 2008 when the oldest baby boomers turned 62, isn't the only factor behind waning labor force growth, but it is the major factor.

Baby boomers, those born between 1946 and 1964, first entered the labor force in 1962 and continued to pour into the labor force through the 1970s and '80s, with the youngest baby boomers turning 16 in 1980. Female participation rates in the labor force were also climbing, adding an additional boost to labor force growth. The boomer share of Minnesota's labor force peaked in 1989 at 57 percent. That was right on schedule, as the peak year for baby boomer births was in 1957.

The 1957 boomers turned 32 in 1989, putting them in their peak working years. They'll turn 62 in 2019 and 65 in 2022. According

to the American Community Survey (ACS), the 2011 labor force participation rate was 88 percent for 30 to 34 year olds, 55 percent for 62 to 64 year olds, and 32 percent for 65 to 69 year olds. That means that 88 percent of the 1957 baby boomers were in the labor force in 1989, while only 55 percent will be in the labor force in 2019 and only 32 percent in 2022.

The baby boomer share of Minnesota's labor force has dropped from the peak of 57 percent in 1980 to roughly 30 percent today. By 2025 only 10 percent of the state's labor force will be baby boomers.

Demographics is destiny when it comes to Minnesota's labor force growth, holding all other factors constant. The slow labor force growth scenario might prove to be overly pessimistic if some other factors break

the right way. Labor force participation rates have been dropping in Minnesota since 2001 and nationally since 2000. That trend will continue as the baby boomers retire, but the decline may be less than expected as labor markets tighten across the country. Labor force participation always drops during recessions, but the decline during the Great Recession was much larger than past recessions.

Labor force participation also might be boosted by baby boomers continuing to work longer than past generations. Labor force participation trends by older workers in Minnesota in recent years have been mixed, with participation rates increasing for 55 to 64 year olds but declining for 65 and older.

Immigration might also surprise on the upside, with more workers moving to Minnesota than

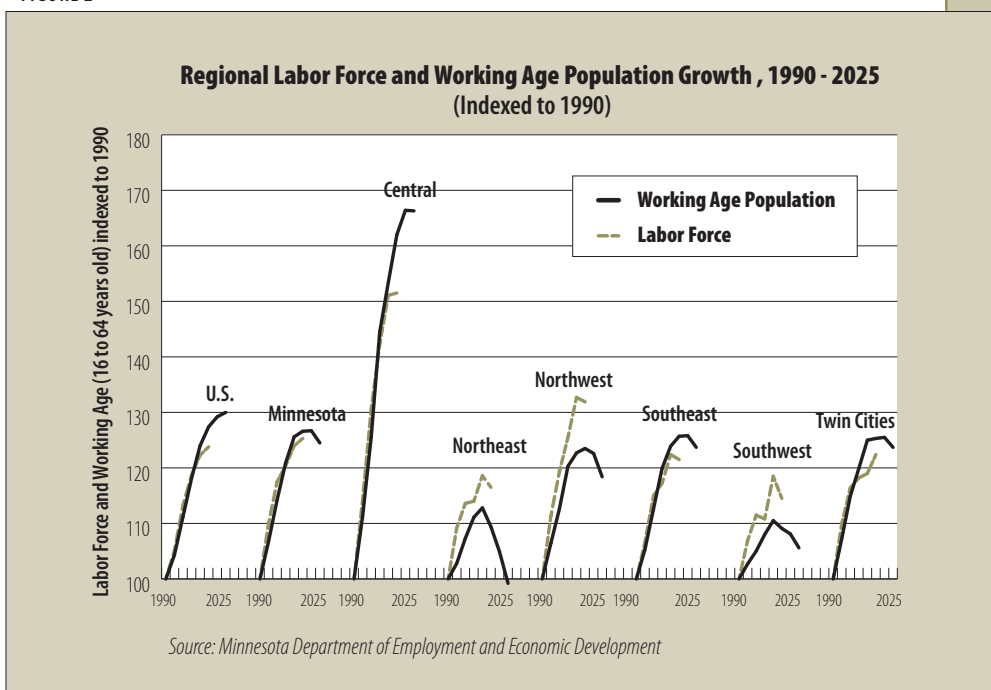
expected. This occurred during the 1990s boom years, but since labor markets will be tight across the nation in future years there may be no repeat of the uptick of interstate immigration.³

Minnesota's labor force, unlike most other states and the country as a whole, continued to grow during the Great Recession, increasing 1.4 percent between 2008 and 2011. The U.S. labor force declined 0.4 percent during that period. Minnesota's labor force growth has slowed over the last few years, while the U.S. labor force has rebounded since 2011, regaining its peak pre-recession level by 2013.

The rebound hasn't been even across states. Minnesota is one of only 18 states that recorded their largest annual labor force in 2013. Michigan's labor force peaked in 2000, West Virginia in 2006, and Rhode Island and Ohio in 2007. Of our neighbors, South Dakota and North Dakota recorded their largest annual labor forces in 2013, but Iowa's peak was in 2008 and Wisconsin's was in 2009.

The variation in labor force growth across Minnesota looks much like the variation nationally. Only in the central and metro regions of the state is the labor force larger today than before the recession. In all the other regions, labor force numbers in 2014 were smaller

FIGURE 2



than in 2010.⁴ During the 2010 to 2014 period, the labor force of the northeast, northwest, southeast and southwest regions decreased by a total of 15,000 workers, while it increased by 46,300 workers in the central and metro regions.

Almost all of the state's labor force growth over the last four years (98 percent) has been in the metro region, with the central region gaining just a few hundred workers. The metro's labor force increased 2.9 percent over the last four years, while Greater Minnesota's labor force shrank 1 percent.

Stagnant or shrinking labor forces in Greater Minnesota can be partially attributed to a weaker economic rebound

than in the metro region since the recession ended. The job market has been weak in Greater Minnesota, and fewer people have been enticed to return to the labor force. Equally important, however, is the older labor force in Greater Minnesota. Retirement levels are probably higher in Greater Minnesota due to the older workforce.

The drop in labor force in Greater Minnesota is shown by region in Figure 2 along with the actual and projected working age population through 2025. Labor force totals are presented for 1990 to 2010 in five-year intervals and for 2014. Working age populations are presented for 1990 to 2025 in five-year intervals.

Minnesota's working age population is projected to peak out for a decade or so in 2020, as is the working age population in the central, southeast and metro regions. Working age population will peak around 2015 in the northwest and southwest regions. The northeast region is already experiencing a declining working age population.

Working age population projections are a pretty good proxy for future labor force unless immigration is higher than expected or labor force participation rates increase. Job growth will be constrained by slower labor force growth, although an increase in people holding multiple jobs or more commuting by workers outside the regional or state borders

might allow job growth to exceed labor force growth for a while. Falling unemployment will also support job growth for a few years, but eventually the unemployment rate will go as low as it can.


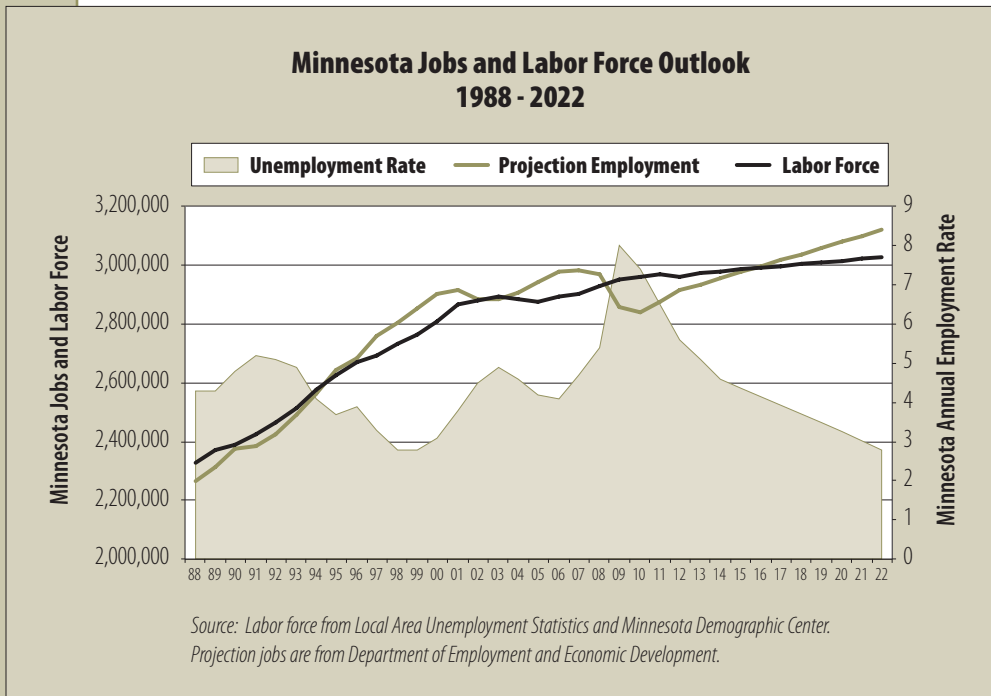
Minnesota will be facing slowing job growth in a few years, given the anticipated tailing off of labor force growth that really kicks in later this decade. As the state's job market tightens, only some of the hole left by the steady stream of baby boom retirements can be filled by drawing marginally attached workers back into the labor force. Minnesota's labor market is headed back to unemployment rates below 3 percent as shown in Figure 3. The exit of baby boomers from the labor force, which has been written about and discussed for the last two decades, is here. 

FIGURE 3



¹Jobs as used here refer to a count of jobs in Minnesota used for long-term projections. It's a hybrid estimate of Minnesota jobs based primarily on Quarterly Census of Employment and Wages data (QCEW) supplemented by estimated self-employed jobs from the American Community Survey and some jobs that aren't covered in QCEW employment but are accounted for in Current Employment Statistics (CES) job estimates. Projected job numbers track closely historically with the Local Area Unemployment Statistics employment estimate. Minnesota 2012- 2022 projections are available at <http://mn.gov/deed/data/data-tools/employment-outlook/>.

²Labor force projections come from the Minnesota State Demographic Center, Minnesota Labor Force Projections - Rates and Totals, 2010-2045, September 2014, <http://mn.gov/admin/demography/data-by-topic/population-data/our-projections/index.jsp>.

³See "In the shadow of the Boomers: Minnesota labor force outlook," Minnesota State Demographic Center, December 2013, for a more in-depth analysis.

⁴Annual regional labor force estimates for 2014 are based on the average of regional seasonally adjusted labor force estimates from January to September 2014.

The Changing Face of Minnesota Manufacturing

Most manufacturing sectors in the state have seen some employment growth since 2009, but some are doing better than others as the industry evolves.

Manufacturing comprises a diverse set of industries that are constantly in flux. Where assembly line workers in factories once were the norm, innovations like 3D printing and sophisticated machinery are changing manufacturing. Furthermore, wages and working conditions vary widely within the sector. Food manufacturing generally is a low-wage and low-skill sector, while medical device manufacturing requires higher skills and offers better pay.

Manufacturing has made up a declining share of employment in Minnesota and nationally over the last several decades. The industry saw little of the massive employment gains in the 1990s and experienced steeper declines than overall employment in both the 2001 and 2007 recessions. Although manufacturing has been adding jobs in the current recovery, the industry is unlikely to regain its prerecession peak much less its overall peak (see Figure 1).

These trends haven't hit all manufacturing industries evenly, though. Some industries have seen employment grow, some have stayed steady and others have plummeted much faster than the sector as a whole. Further investigation can help us understand more about the switch to the "service economy" and how not just the number but the types of available manufacturing jobs are changing.



FIGURE 1

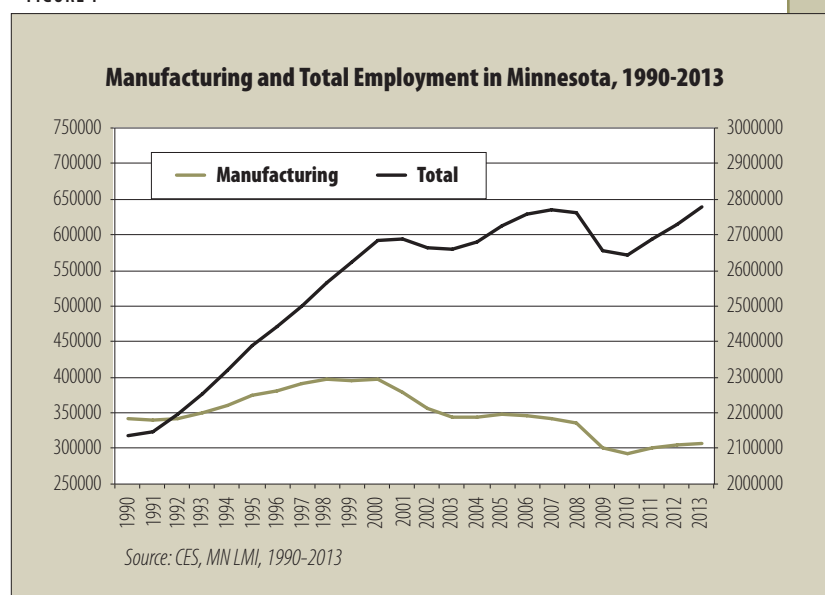
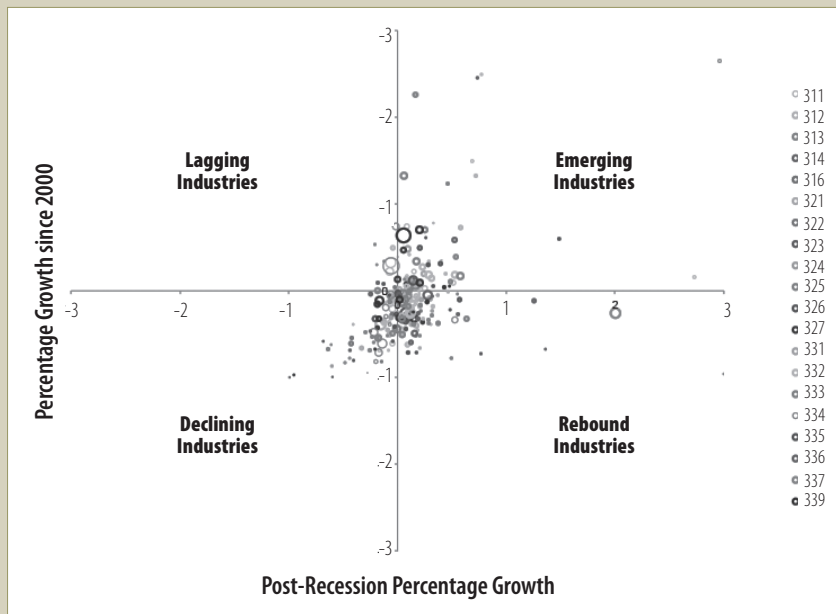


FIGURE 2

Scatter Plot of Manufacturing Industry Employment Trends, 2000 to 2013

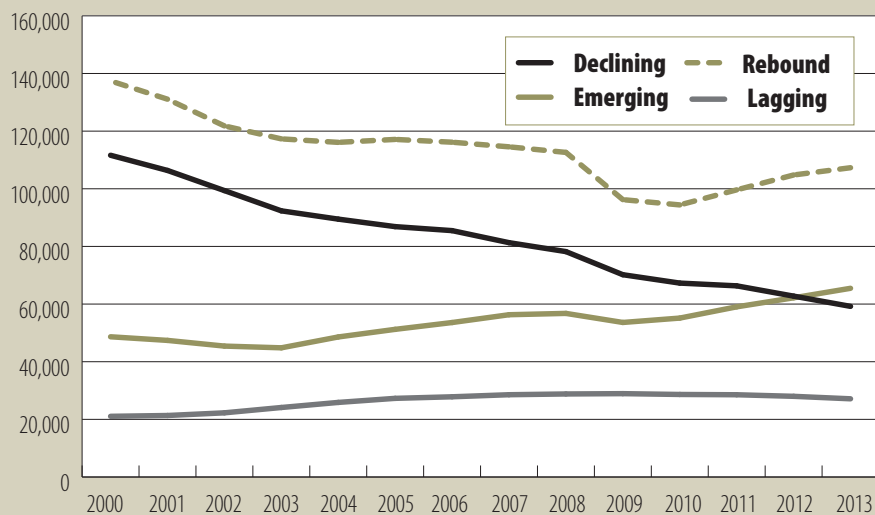
Source: QCEW 2000, 2009, 2013 Annual, MN LMI

Note: Color indicates three-digit NAICS category. No single three-digit NAICS dominates any quadrant.

Process and Methods

In Minnesota, the manufacturing industries that are faring well are shifting the sector away from our traditional mix. This analysis calculated employment change since 2000 and since the recession ended in 2009 for each detailed (six-digit NAICS) manufacturing industry. The results are displayed on a scatter plot (see Figure 2) and divided into four groups. “Emerging Industries” grew both since the recession started and since 2000. “Declining Industries” declined in both time periods. “Rebound Industries” grew since the recession but are still at lower levels than in 2000. “Lagging Industries” grew since 2000 but are still below their recession levels.

FIGURE 3

Employment by Group

Source: QCEW data, MN LMI

The overall growth trend is apparent. Although clustered around no change, most manufacturing industries have seen some employment growth since 2009, with some significant outliers in the positive territory (including some not displayed because they're off the axis). Most outliers are small or mid-size industries.

Lagging Industries are the rarest. Most industries that are suffering now were already on a downward trajectory that picked up pace during the recessions. Generally, employment in Lagging Industries is more stable with fairly flat employment trends.

Characteristics of Industry Groups

The industries in each group vary dramatically on a number of characteristics. By examining trends separately, we can get a sense of what kind of firms are growing or declining and a hint at why.

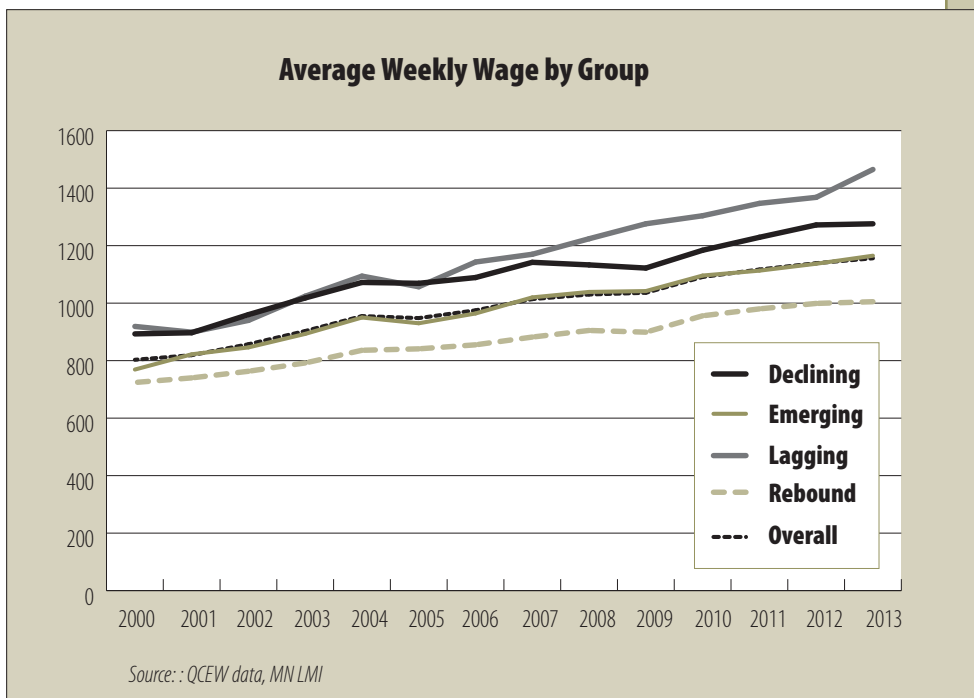
Number Employed in Manufacturing

Declining and Rebound Industries make up a majority of employment overall and share a pre-recession downward trend (see Figure 3). Rebound Industries, however, have grown enough to reach 2007 employment levels. The declines since 2000 happened between 2000 and 2007, mostly during the recession in 2001. The pace of decline in Declining Industries has been steady, down 40,000 jobs since 2000.

Emerging Industries have been on a similarly steady growth trajectory, with growth beginning after the 2001 recession and only stumbling in 2007. The pace and overall number of jobs has been much slower and smaller, however.

Lagging Industries are characterized by much less overall change. They have relatively few jobs in the state and tend to be concentrated in medical device firms in the Twin Cities.

FIGURE 4



The fastest pace of growth and most new/returning jobs since the recession come from Rebound Industries.

Wages in Manufacturing

These trends are particularly concerning when we look at wages (see Figure 4). Lagging and Declining Industries have the highest wages, so the best-paid jobs in manufacturing are making up a smaller and smaller share of the total.

Emerging Industries are right in the middle on wages, while wages for Rebound Industries lag the average by a steadily increasing gap — \$80 per week in 2000 to \$150 per week in

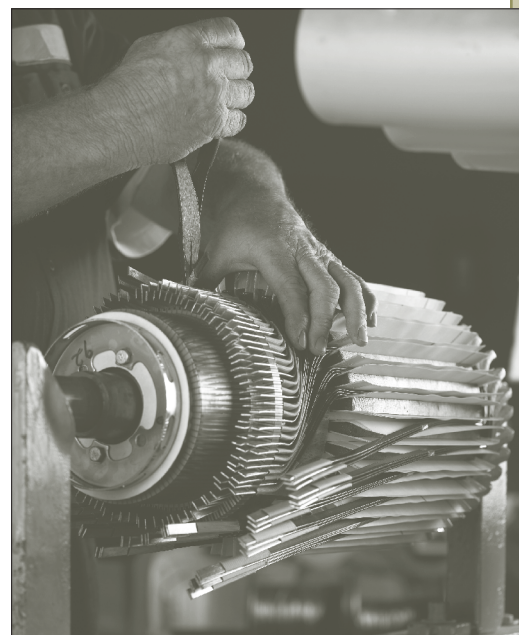
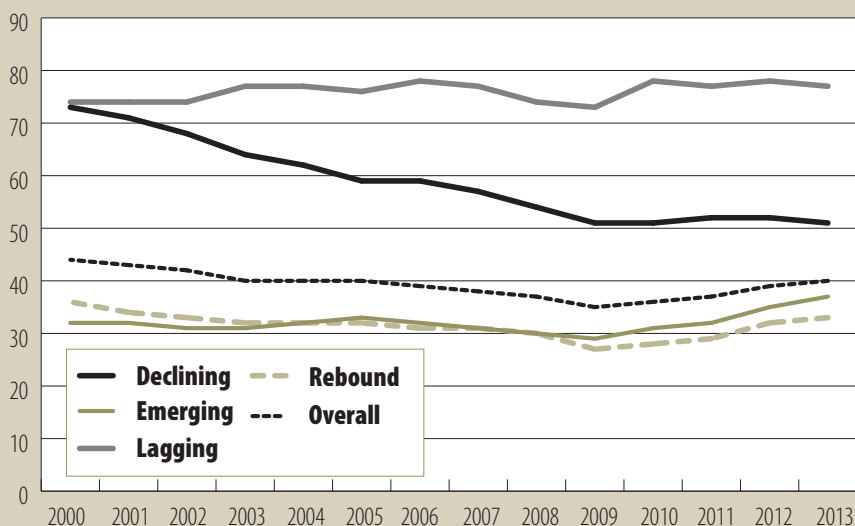


FIGURE 5

Average Firm Size by Group



Source: : QCEW data, MN LMI

2013. Overall, this means that most of the manufacturing jobs that have returned since the recession pay well below the jobs they've replaced.

Firm Size and Number in Manufacturing

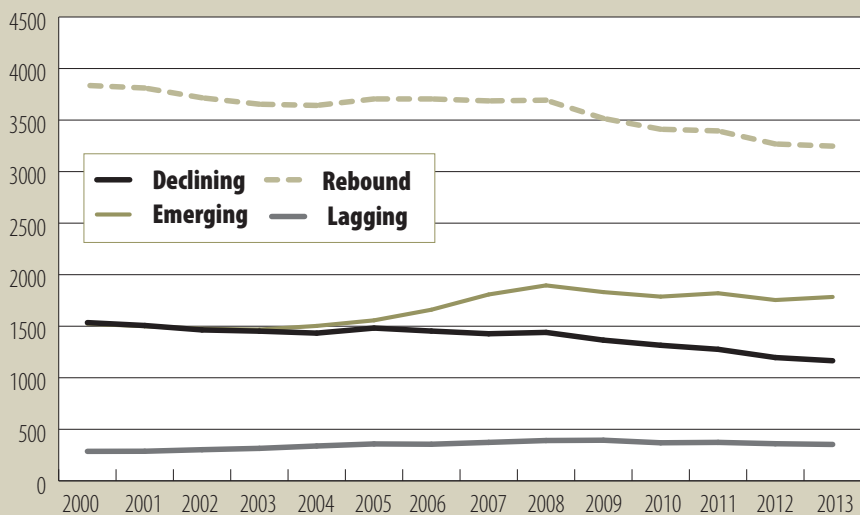
The size of a firm also can be relevant to the types of jobs it provides. Larger firms often allow more specialization in jobs, and economies of scale make them more likely to provide good benefits. Smaller firms can be more flexible and responsive to change. Average firm size has changed since 2000 as well (see Figure 5).

Lagging Industries are the largest on average and most consistent in size since 2000, likely the same firms with stable employment over this time. Declining Industries are large but shrinking, likely due to layoffs not closures. The Emerging and Rebound groups are made up of small but growing firms. Overall, new firms are small but growing, while larger, established firms are shrinking.

Overall, Rebound and Declining firms are closing (see Figure 6), although the Rebound firms that remain are growing in size. Employment growth in Rebound Industries is likely coming from expansion and consolidation.

FIGURE 6

Number of Firms by Group



Source: : QCEW data, MN LMI

TABLE 1

Percent of Employment by Geography and Category (Using Pre-2013 Metro Definitions)					
	Dedining	Emerging	Lagging	Rebound	Overall
Metro	67.9%	74.8%	78.1%	65.1%	69.5%
Micro	17.4%	13.3%	15.2%	21.1%	17.7%
Rural	14.7%	11.9%	6.7%	13.8%	12.8%
MSP	48.5%	65.0%	68.4%	50.7%	55.6%
Non-MSP	51.5%	35.0%	31.6%	49.3%	44.4%

Source: QCEW 2000, 2009, 2013 Annual, MN LMI

The number of Lagging firms is stable, while the number of Emerging firms was growing until the recession but has since dropped slightly. New firms might be the next area of growth in manufacturing as confidence in the economy improves.

(6.7 percent, compared with 12.8 percent of manufacturing jobs overall).

Lagging Industries are stable and established, and they tend to be centered in the Minneapolis-St Paul-Bloomington MSA (11-county area). Emerging

Industries — largely new and small firms — also are largely within the Twin Cities MSA. Job creation in manufacturing is happening in the core cities. Declining Industries tend to be more rural and further from the metros.

Geography by Group

The geographic dispersion of manufacturing employment varies by growth category as well (see Table 1). Lagging Industries (78.1 percent) are largely in the metros (including St Cloud, Duluth, Rochester, Mankato, Fargo and Grand Forks). Rebound Industries are disproportionately represented (21.1 percent) in micropolitan areas, which account for 17.7 percent of all manufacturing jobs in the state. Emerging Industries are disproportionately not in micropolitan areas (13.3 percent). Lagging Industries are under-represented in rural areas



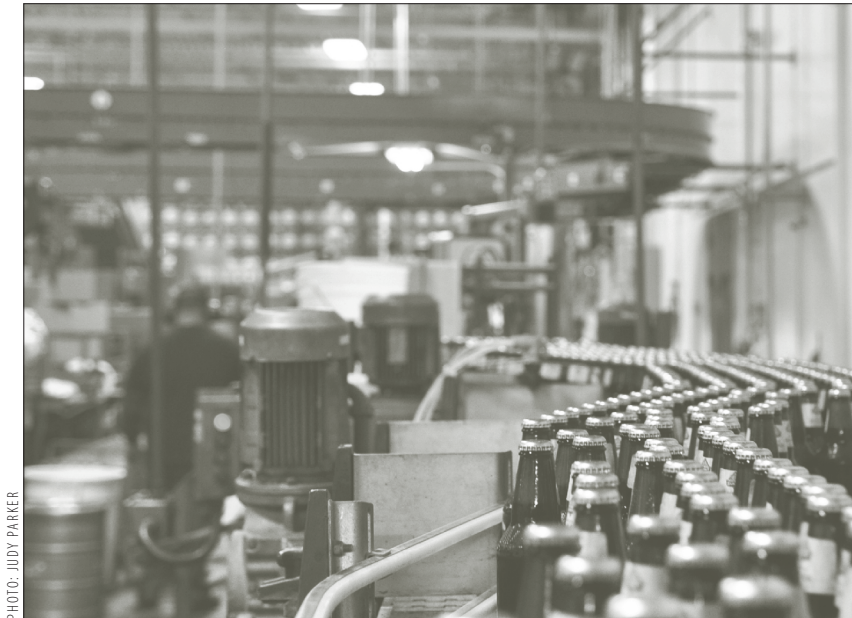


PHOTO: JUDY PARKER

TABLE 2

Top 15 Declining Industries (Excluding Industries Smaller Than 20 in 2013)		
Industry	2013 Employment	Percent Change 2009-2013
Mineral Wool Manufacturing	21	-95.2
Paint and Coating Manufacturing	263	-63.6
Asphalt Paving Mixture and Block	88	-60.2
Electronic Coils, Transformer and Inductor	258	-47.9
Railroad Rolling Stock Manufacturing	88	-44.0
Audio and Visual Equipment Manufacturing	208	-43.8
Folding Paperboard Box Manufacturing	641	-43.1
Newsprint Mills	279	-41.9
Roasted Nuts and Peanut Butter Manufacturing	158	-41.3
Noncurrent-Carrying Wiring Devices	46	-40.3
Reconstituted Wood Product Manufacturing	434	-33.2
Industrial Process Furnaces and Ovens	200	-29.8
Aircraft Engine and Engine Parts	83	-25.2
Photographic Film and Chemicals	283	-25.1
Aircraft Manufacturing	422	-25.0

Source: QCEW 2000, 2009, 2013 Annual, MN LMI

Detailed Industries by Group

Over the long term, manufacturing employment in Minnesota is declining. The decline is driven by certain industries. Others are growing, but it's difficult to get a clear view of patterns from the detailed industries because there are many of them and they are small. An industry with 20 employees can double with little overall impact, but significant patterns can be missed if individual small industries are ignored. To counter these challenges, a large number of industries was sorted by percentage change.

Declining Industries comprise a broad mix of manufacturers, including construction products, high tech consumer products and aircraft (highlighted in Table 2).

Emerging Industries tend to produce supply-chain industrial products, including metal processing and motor vehicle parts, rather than products for retail sale. The exception seems to be in food products. A disproportionate number of food and beverage production industries are represented in this group (highlighted in Table 3). Many of these — tea, beer, wine, liquor — are likely specialty luxury goods that serve a niche market without much potential for huge growth.

Lagging Industries include more complex and high-tech manufacturing, including medical device firms (highlighted in Table 4). All industries in this small group are listed in the table.

Rebound Industries have a lot of heavy machinery and disproportionately include industries that manufacture vehicles and vehicle parts (highlighted in Table 5).

Location Quotient Analysis

Location quotients (LQs), which measure employment concentration, were calculated as the share of all manufacturing in Minnesota relative to the rest of the country. Industries with a 2009-2013 change in LQ of 0.3 or higher were selected. Not all industries matched up. Some had unpublished U.S. values or missing years that made LQ calculations impossible, so this analysis is not exhaustive. LQ tables are published in the online version of this story at www.mn.gov/deed/trends.

What stands out about LQs is how little they have changed even in industries that have grown or declined a lot since 2009. When the LQ doesn't change much, it means that the industry is growing or declining locally at about the same pace as nationally.

TABLE 3

Top 20 Emerging Industries		
Industry	2013 Employment	Percent Change 2009-2013
Secondary Processing, Other Nonferrous	263	592.1
Electronic Connector Manufacturing	511	296.1
Frozen Pastry Manufacturing	433	273.3
Tire Retreading	174	148.6
Dried and Dehydrated Food Manufacturing	429	142.4
Wineries	199	134.1
Misc. Nonmetallic Mineral Products Manufacturing	504	115.4
Mattress Manufacturing	585	110.4
Coffee and Tea Manufacturing	266	77.3
Motor Vehicle Steering/Suspension Parts	90	73.1
Distilleries	284	72.1
Tortilla Manufacturing	409	68.3
Breweries	571	58.2
Industrial Mold Manufacturing	1,968	57.3
Adhesive Manufacturing	723	54.2
Small Arms Ammunition Manufacturing	1,715	53.0
Truck Trailer Manufacturing	894	52.6
Fluid Milk Manufacturing	1,139	51.7
Fasteners, Buttons, Needles, and Pins	67	48.9
Optical Instrument and Lens Manufacturing	579	48.5

Source: QCEW 2000, 2009, 2013 Annual, MN LMI

In Declining Industries, the significant declines were in computer storage device and cheese manufacturing, but both were still more concentrated here than nationally. Leather hide tanning and finishing increased LQ despite declines overall, but that's a very small industry.

In Emerging Industries most LQs increased, which makes sense since these were selected

for growth. The most significant changes were in motor and generator manufacturing (up 0.6) and in all other miscellaneous food manufacturing (down 0.6).

Lagging Industries saw no significant LQ changes, in keeping with their constant employment patterns.

A few Rebound Industries saw significant increases: all other

transportation equipment, metal household furniture manufacturing, fluid power pump and motor manufacturing. Vehicle-related manufacturing seems to be growing significantly compared with the rest of the country with the most significant and positive shifts in LQ.

Conclusions

Manufacturing employment is on a long decline, taking with it an entire class of skilled labor. The jobs that remain and that have been growing since the recession are changing shape as well. Firms are getting smaller, and newly added jobs tend to pay less because growth trends are favoring lower-paying industries.

Growing industries are largely unrelated to declining industries. Manufacturing construction products is dramatically different from distilling liquor, and medical device workers might not be well suited for jobs producing motor homes.

The location of firms is changing, too. New growth is occurring outside of the metro areas, leaving many workers with fewer options close to home. The pace of change is relatively slow, and workers likely are adapting. ■

TABLE 4

Lagging Industries		
Industry	2013 Employment	Percent Change 2009-2013
Irradiation Apparatus Manufacturing	25	0.0
Cut Stone and Stone Product Manufacturing	1,407	-0.3
Printed Circuit Assemblies	2,126	-1.0
Paperboard Mills	181	-2.2
Industrial Valve Manufacturing	647	-4.0
Electromedical Apparatus Manufacturing	12,898	-5.5
Animal (Except Poultry) Slaughtering	5,121	-6.3
Commercial Bakeries	2,898	-7.4
Agricultural Chemicals Except Fertilizer	43	-12.2
Plastics Packaging Film and Sheet	165	-13.2
Other Aircraft Parts and Equipment	233	-18.3
Pharmaceutical Preparation Manufacturing	1,163	-18.6
Magnetic and Optical Media Manufacturing	160	-19.2
Power-Driven Handtool Manufacturing	63	-21.3

Source: QCEW 2000, 2009, 2013 Annual, MN LMI

TABLE 5

Top 15 Rebound Industries		
Industry	2013 Employment	Percent Change 2009-2013
Travel Trailer and Camper Manufacturing	509	125.2
Metal Household Furniture Manufacturing	392	87.6
Fluid Power Pump and Motor Manufacturing	868	63.5
Mechanical Rubber Product Manufacturing	528	57.1
Motor Vehicle Metal Stamping	197	55.1
Custom Architectural Woodwork and Millwork	501	52.7
Semiconductor and Related Devices	1,764	52.2
Welding and Soldering Equipment Manufacturing	118	49.4
Hardwood Veneer and Plywood Manufacturing	88	46.7
Analytical Laboratory Instruments	241	37.7
Machine Tool Cutters and Accessories	547	37.4
Secondary Smelting/Alloying of Aluminum	133	37.1
Bolts, Nuts, Screws, Rivets, and Washers	309	32.6
Petroleum Lubricating Oil and Grease	132	32.0
Mechanical Power Transmission Equipment	238	31.5

Source: QCEW 2000, 2009, 2013 Annual, MN LMI

No College Required

Certificates and licenses can be the ticket to a good job in some occupations in Minnesota.

Not everybody wants to attend college or has the time or money to earn a college degree. Fortunately, there are options for people who want in-demand careers that don't require extensive education or training programs. In many cases, earning a certificate or license is sufficient for landing a good job.

Job vacancy ads on WANTED Analytics¹ showed that four occupations – dental assistant, emergency medical technician (EMT) or paramedic, pharmacy technician and truck driver —

were the most in-demand jobs in Minnesota that require only licenses and certifications, along with a high school diploma or GED.

The table below provides an overview of these four occupations, including the number of Minnesota job openings currently listed on WANTED Analytics, the certification or license requirements, level of demand and typical wages.

The Process

Because the goal of this project was to identify in-demand jobs requiring certifications, the first step was to identify the top 100 certifications in current job ads that require a high school diploma or less, using WANTED Analytics. After cleaning the list so that only valid in-demand certifications were included,² the next step was to check which occupations, if any, linked to these certifications. Once that was complete, the list of certifications/occupations

Certifications in Demand in Minnesota, May to August 2014

Occupation	Minnesota Job Ads in WANTED Analytics	Certification or License Name	Percent of Openings Requiring Certification	Current Demand Score	Typical Education Required	Typical On-the-Job-Training Required	Typical Wage Range
Dental Assistant	41	Certified Dental Assistant	88%	4	Postsecondary Non-Degree Award	None	\$17.96 to \$23.14 Per Hour
EMT and Paramedic	141	EMTs and Paramedics	89%	5	Postsecondary Non-Degree Award	None	\$13.32 to \$21.47 Per Hour
Pharmacy Technician	569	Pharmacy Technician (License)	99%	5	High School/GED	Moderate Term on the Job Training	\$12.14 to \$18.25 Per Hour
Truck Driver*	15,532	Commercial Driver's License (CDL)	79%	5	High School/GED	Short term on the Job Training	\$11.37 to \$24.07 Per Hour

Sources: Job ads: WANTED Analytics, May 1 to Aug. 27, 2014.

Demand scores: The scores range from 1 (lowest current demand) to 5 (strongest current demand). The score is based on the number of job vacancies and other indicators. See <http://mn.gov/deed/oid/> for a detailed description of the Occupations in Demand indicator.

Training required: Typical education and on-the-job training required is a national dataset from the Bureau of Labor Statistics.

Wage range: The typical wage range is 25th percentile and 75 percentile wages as reported in the Occupational Employment Statistics survey for first quarter 2014.

*Truck driver includes heavy and tractor-trailer truck and light truck or delivery services drivers. Most bus drivers also need a commercial driver's license.

was linked to Occupations in Demand to get information such as current demand score and typical wage ranges.

The Occupations

Three of four of these certifications/licenses are in the medical field. The following provides more details on each occupation.

Dental assistants help dentists, set up equipment, prepare patients for treatment and keep records. Three-quarters of dental assistants have less than an associate degree, and most dental assistant programs can be completed in fewer than two years. The typical wage range in Minnesota is \$18 to \$23 per hour.

EMTs and paramedics assess injuries, administer emergency medical care and extricate trapped individuals. They also transport injured or sick people to medical facilities. Sixty-five percent have less than an associate degree. Most EMT and paramedic programs can be completed in fewer than two years. The typical wage range in Minnesota is \$13 to \$21 per hour.


Pharmacy technicians help pharmacists prepare and dispense medications, maintain inventory records, clean equipment, receive and store incoming supplies, and process records of medication and equipment dispensed to patients. Sixty-three percent have less than an associate degree, and most pharmacy technician programs can be completed in fewer than two years. The typical wage range in Minnesota is \$12 to \$18 per hour.

Truck drivers operate trucks and buses, maintain truck logs, keep records of materials transported, load and unload materials, obtain customer signatures, and inspect trucks before and after trips. Forty-nine percent of truck drivers have a high school diploma or equivalent. The

typical wage range in Minnesota is \$11 to \$24 per hour. This includes the range for both light and delivery truck drivers and heavy and tractor trailer truck drivers. Drivers can add to the basic commercial driver's license depending on the amount of training they are willing to complete and the type of job they are interested in obtaining.

While the list is short, obtaining any of these certifications or licenses will likely lead directly to a job since each of these occupations is in high demand. Most current vacancies require the certification or license.

For More Information

More information on these certifications can be found on the CareerOneStop website at www.careeronestop.org. Type "certification finder" into the search bar in the top right corner of the website. The certification finder tool allows people to find certifying organizations and view requirements that have to be met before trying to obtain the certification. Use Occupations in Demand at <http://mn.gov/deed/oid> to find schools in your region that offer programs in these occupations. 



¹<https://www.wantedanalytics.com/>

²The WANTEDAnalytics software often misinterpreted key words or phrases in the job ads as certifications. All ads that were identified by the software as listing a certification were examined to confirm that the certification was listed as a required or desired qualification.

Meet

THE WRITERS



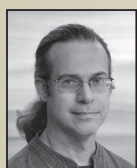
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MINNESOTA ECONOMIC TRENDS

MINNESOTA ECONOMIC TRENDS is published by the Labor Market Information (LMI) Office of the Minnesota Department of Employment and Economic Development (DEED).

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MINNESOTA ECONOMIC

TRENDS

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